Deconstructing pancreas development to reconstruct human islets from pluripotent stem cells.

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Public Summary:
This paper is a review regarding the potential of human stem cells to generate pancreatic islet cells for tissue replacement.

Scientific Abstract:
There is considerable excitement about harnessing the potential of human stem cells to replace pancreatic islets that are destroyed in type 1 diabetes mellitus. However, our current understanding of the mechanisms underlying pancreas and islet ontogeny has come largely from the powerful genetic, developmental, and embryological approaches available in nonhuman organisms. Successful islet reconstruction from human pluripotent cells will require greater attention to "deconstructing" human pancreas and islet developmental biology and consistent application of conditional genetics, lineage tracing, and cell purification to stem cell biology.